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ABSTRACT

This paper reviews the findings of TEMPO's 1967 and subsequent evaluation studies and offers some conclusions and recommendations aimed at strengthening Title I compensatory education programs. An overview of Title I and a description of the TEMPO study and its methodology are provided. It is stated that, with the measurement methods used, no evidence of widespread enhanced reading achievement could be found to be associated with the first full year of Title I. More refined analytical methods using longitudinal techniques are said to be necessary in order to determine evidence of success. The need for detailed and precise information from individual program sites is stressed. Problem areas in the allocation of compensatory education funds are also outlined. (Author/EB)

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TEMPO

EVALUATION OF TITLE I ESEA COMPENSATORY EDUCATION

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In 1967 TEMPO, in conjunction with the U.S. Department of Health, Education and Welfare, conducted an evaluation study of the then recently implemented Title I programs under the Elementary and Secondary Education Act of 1965. This evaluation, which covered a sample of 11 school districts throughout the country, was intended to determine (1) whether compensatory education programs resulted in significant enhancement of pupil performance, and (2) what pupil, school, and compensatory program characteristics were associated with changes in pupil performance. This paper reviews the findings of the TEMPO study and other evaluation efforts that have been conducted subsequently, and offers some conclusions and recommendations aimed at strengthening Title I compensatory education programs.

PURPOSE OF TITLE I, ESEA

The purpose of Title I of the Elementary and Secondary Education Act of 1965 is to provide financial assistance to public schools which have concentrations of children from low-income families. The act recognizes that a high correlation exists between educational deprivation and low income. The basic approach has been to provide funds for compensatory education projects chosen by local school districts, and actual projects have ranged from preventive health programs that serve all pupils in a school to special remedial reading courses for small groups of students. Pupils were first exposed to most compensatory education programs initiated under Title I in the latter half of the 1965-1966 school year. Since then, federal funding for each year of Title I has ranged from $960 million to $1.5 billion.

The education gap between pupils in typical Title I schools and non-Title I schools is significant and critical. For example, the statistical distribution of test scores for reading or any other particular skill of pupils in a certain grade in a Title I school typically stands well to the left of the corresponding distribution taken from the overall national picture, as indicated by Figure 1. The amount of difference varies, of course, but, in general, fourth grade pupils in Title I schools lag about one year behind national achievement levels.

A consequence of this problem is illustrated by Figure 2. The norm-achieving pupil achieves at the rate of 1.0 grade unit of academic progress for each school year. The typical disadvantaged pupil progresses at a rate equal to only 65-75 percent of the norm. Thus, after 12 years a disadvantaged pupil can be as much as four years behind, if he is still in school. One of the goals of compensatory education (CE) is to improve the achievement rate of these disadvantaged pupils and thus lessen the gap between them and the national norm.

TEMPO CE EVALUATION

In April of 1967 TEMPO undertook a study to determine the effects of compensatory education grants. This study utilized results of achievement tests which were administered in academic years 1965–1966 and in 1966–1967. In conjunction with the U.S. Department of Health, Education and Welfare, TEMPO established two major objectives for evaluating the effects of compensatory education programs. The first objective was to determine whether statistically significant enhancement of pupil performance had occurred within the Title I schools after the implementation of Title I programs. The second objective was to determine what characteristics of the pupils, the schools, and the compensatory programs were associated with changes in pupil performance. Both TEMPO and HEW felt that the answers to these questions would be useful in explaining the success, or lack of success, of these new programs and would influence the future design of CE projects. In addition, such information would be needed for policy guidance for both HEW and the Congress.

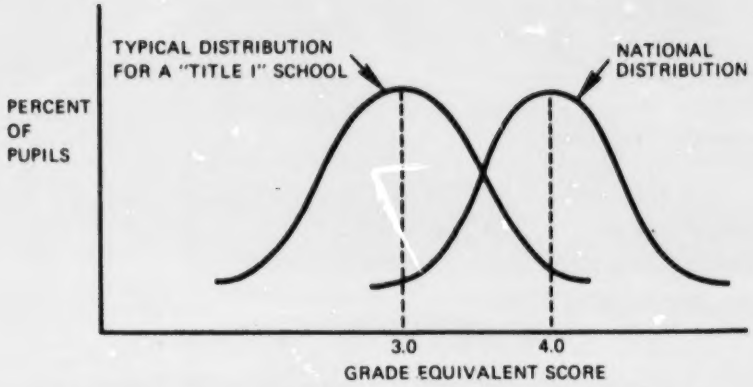

Figure 1. Typical education gap found between Title I fourth-grade classes and the national norm.

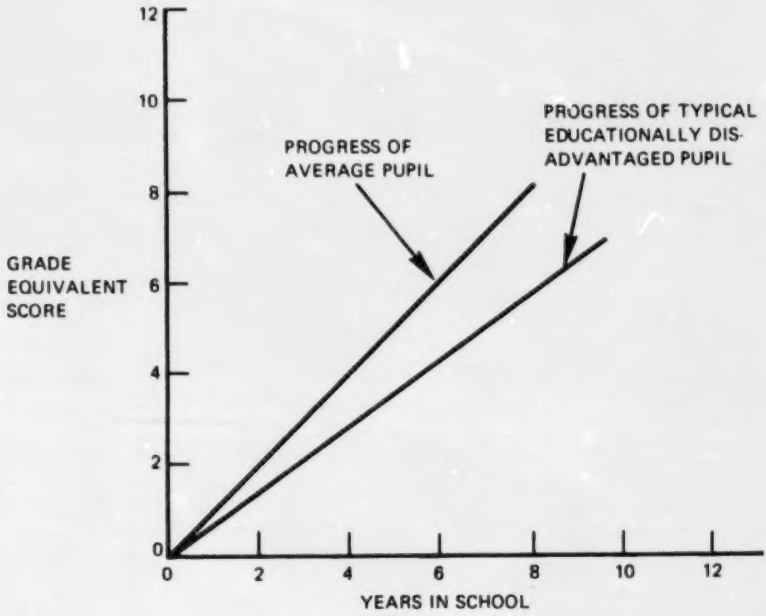

Figure 2. Education gap between national average and disadvantaged pupils.

Selection of Evaluation Sample

Title I funds were spread over many cities, schools and pupils, and it was impossible to study the entire population. The varied nature and short duration of the Title I projects at the time of the evaluation also meant that information available at the state and federal levels was limited. This led to the need for field investigation and data collection in a sample of Title I schools. Factors considered in the selection of the sample school districts were:

- Geographical and size dispersion
- Urban versus nonurban
- Data availability
- Cooperation of school personnel
- Expectations of successful programs.

The last item, "expectations of successful programs," was included since it was anticipated that after only one year of Title I exposure there might be some difficulty in finding measurable evidence of pupil progress. Therefore, HEW personnel helped select sample school districts considered most likely to show signs of progress. Initially 14 school districts throughout the country were considered as sample candidates and visited. Of these, three did not have sufficient data for analysis, and thus the final sample was reduced to 11 urban school districts.

Within each school district, a subsample of Title I schools was chosen with the assistance of local administrators which included varying values for each of the following characteristics:

- Pupil attributes
  - Educational deprivation
  - Economic deprivation
  - Mobility
  - Grade level
- School attributes
  - Enrollment
  - Percent negro
  - Attendance rates

- CE program attributes

  Magnitude of prior CE programs

  Intensity of current CE programs.

The final sample included 132 schools containing 118,000 pupils from which pre and posttest scores of 35,000 pupils were obtained and analyzed.

Data Searches

Joint TEMPO and HEW field teams conducted on-site searches within school districts for the necessary data to conduct analyses. The desired data related to pupil performance, school and pupil characteristics, and those describing expenditures for Title I programs. Reading performance was chosen as the primary indicator of pupil achievement because it is a skill in which the disadvantaged are most noticeably deficient and because it was known that many school districts had implemented some form of reading improvement program as a part of their Title I efforts.

Attendance rates and dropout rates were included to test the hypothesis that special compensatory projects might increase attendance and reduce dropout rates and, hence, contribute to performance gains. School and pupil characteristics were thought to have potential importance with respect to pupil achievement changes and, likewise, it was natural to look for relationships between pupil performance and Title I expenditures per pupil.

Data Analysis

Two methods were used to evaluate achievement enhancement: the "longitudinal," or "individual," method and the "fixed-grade" method. Both of these focused on actual changes from a pretest and posttest situation. A third method of analysis utilized some standard statistical methods to investigate the existence and validity of relationships between observed changes in achievement and pupil, school and program characteristics.

In the longitudinal method (see Figure 3) an individual pupil's test score before exposure to Title I programs is compared with his score after exposure to these CE activities. This progress can

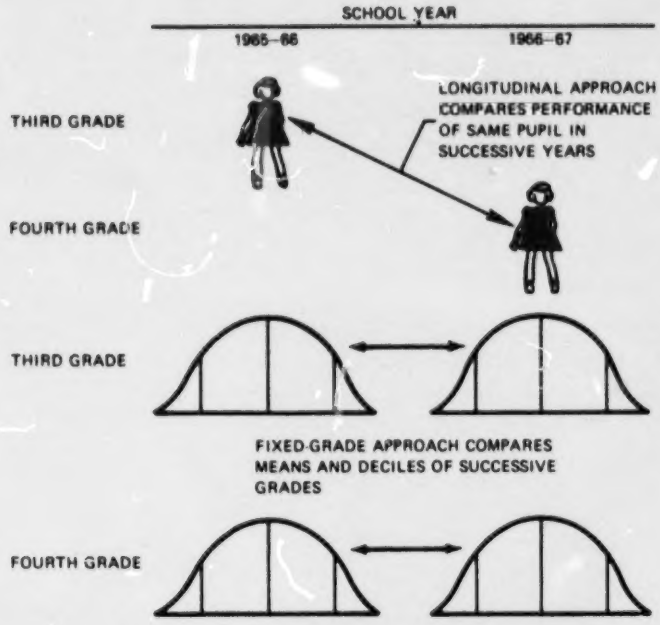

Figure 3. Comparison of fixed-grade and longitudinal evaluation approaches.

then be compared to normal rates of increase or the achievement gains that would be expected without special programs. However, this method requires that comparable tests be given to the same pupil in successive years, and this had not been done in most of the sample districts. Furthermore, the test data for each year must be identifiable for individual pupils, but in reality much of it was available to TEMPO only in terms of the distribution of the class as a whole.

In the fixed-grade approach (Figure 3) a specific grade and school is defined as a unit and the performance of the pupils in that unit is compared in two successive years. That is, the different performance levels of, say, the fourth grade in a certain school that had received compensatory education are compared with the performance levels of the fourth grade in the same school for the previous year when no compensatory education was received.

This was an important method of evaluation for the first two years of Title I, since the previous year's class could serve as a control or comparison group. Although some specialized remedial programs under Title I concentrated on only a small part of a particular class, thereby ruling out the fixed-grade type of analysis, many other Title I programs such as teacher aides, guidance counselors, and lowered class size affected all members of a particular class or an entire school. Since most of the funding was spent on general programs of this latter type in the first and second years of Title I, it was decided to employ the fixed-grade method in all school districts in the sample.

Study Findings

A wide variety of Title I programs was conceived and implemented by the school districts in the sample. Several school districts used a large proportion of their funds to decrease class size or to provide teacher aides in their Title I schools. Many other programs similarly benefited all students in a school or grade whether they were educationally disadvantaged or not. In contrast, the same or other schools provided a variety of special programs limited to disadvantaged pupils. During the first year of Title I over a third of the funds received were spent on the purchase of equipment and on school construction.

Another way of illustrating the wide variety of Title I activities and concentration of funding is in terms of the average expenditures per Title I pupil across school districts—in the sample, these ranged from less than $25 per pupil in one district to more than $225 in another, with the average per pupil throughout all 11 districts approximating $40.

The basic grouping of data was that of a grade unit, i.e., all students within a given grade in a specific school There were 314 such units of observation in the sample representing some 35,000 students over the 2-year period studied. Depending on the testing schedule for a particular school district, the period covered was either from October 1965 to October 1966 or May 1966 to May 1967 or, in a few cases, September 1966 to June 1967.

Since one basic question being investigated by this study was the enhancement of pupils' performance in Title I schools, a major

analytical task was to determine to what degree the frequency distribution for a particular grade unit shifted left or right during the exposure period, i.e., whether the achievement gap between Title I classes and the national norm was being closed. Therefore, the analysis focused upon the movement of the mean and the first decile of that distribution. Movements in the mean were of interest because these would reflect changes in achievement for the majority of students in a grade unit. Movements in the first decile, the point which the lowest 10 percent of the pupils in a class are below, were of particular interest because of their reflections of the effect of Title I programs on the most educationally deprived children and also because these pupils were the ones usually involved in the remedial reading programs.

Figure 4 shows the results of the fixed-grade analysis of changes in reading achievement in terms of decline, no change, and increase for the first deciles and means of the sample grade units. However, these results were clouded by a peculiarity in the data and could not be definitively interpreted for this and other reasons. In some of the sample grade-units the test score defining the lowest

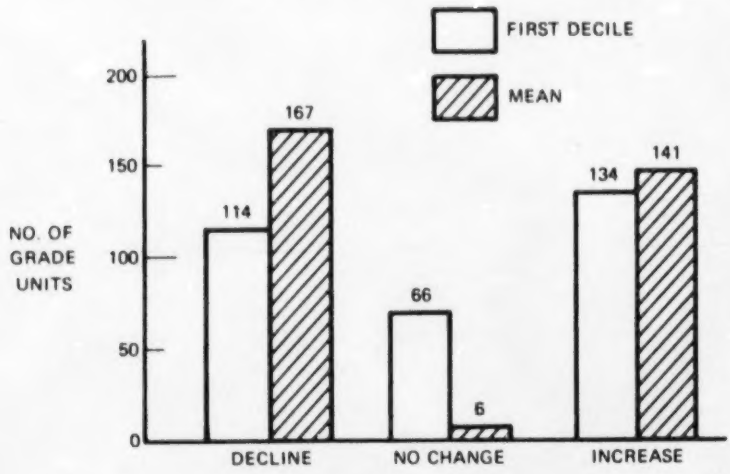

Figure 4. Reading achievement changes at the mean and the first decile.

decile in the first year was equal to the minimum possible score. Thus, in some cases, it was impossible for pupils at the lowest decile to register a lower score the next year, even if a negative change did in fact occur.

Although the number of positive and negative changes that occurred in both the lowest decile and in the mean of the 314 grade units was large, the average amount of changes in these statistics was small, corresponding to movements of less than one-half of a percentile. The positive change that occurred at the lowest decile (which is numerically equal to only about one-fourth of a month's growth, in terms of grade equivalents) is difficult to interpret. Possibly, the pupils who were in greatest need responded positively to the Title I programs. On the other hand, in the majority of cases (180 out of 314), there was either a negative change in the first decile (114 cases) or no change (66 cases). The 66 cases of no change in the first decile are also suspect, especially when compared with the number of no change cases in the mean, because of the abovementioned inability of the test results to measure first decile declines in many cases. Further, the overall average changes for the first quartile, mean, and third quartile pupil scores were lower the second year—and these were students who also were well behind the norm! Thus, in the fixed-grade sample studied, the temptation to conjecture that Title I caused the improvement at the lowest decile must be curbed by the need for a corresponding causal explanation of the negative changes in the other statistics.

In judging the meaning of these overall performance changes, the question of their effect on long-term trend arose. Many education experts have claimed that inner-city schools have been suffering steady declines in average achievement levels. TEMPO investigated the possibility that Title I programs had reduced or arrested a long-term negative rate in achievement levels by studying five of the school districts in greater depth. Five-year performance histories prior to Title I implementation were collected and analyzed. These revealed varying performance patterns at the district, school, and grade level rather than a discernible decline and provided no basis for making systematic adjustments to the observed achievement data.

Longitudinal analyses of individual pupil performance differences were conducted on a much smaller scale. These results were encouraging and indicated that some Title I programs may have produced significant achievement enhancement that was obscured by the preponderance of very general CE projects or by the fixed-grade method of analysis.

The nature of most CE projects and the limited availability of proper data made the longitudinal type analysis feasible in only one district. Within that district a large, concentrated reading improvement program showed very impressive gains. In this intensive program, the pupils received about 4-1/2 hours of instruction per week from specially trained teachers and a classroom assistant.

The average improvement in reading scores from the pupils in the program was 10 percent greater than the normal achievement rate of 1.0 grade equivalent units per year. This is even more remarkable in light of data which show that the educationally retarded pupils in that district progress, on the average, at a rate equal to about 65 percent of the normal achiever. Thus, in this case it appeared that the gap between the educationally disadvantaged pupil and the norm pupil was being narrowed as indicated in Figure 5. Instead of the average disadvantaged pupil in the reading program progressing from point A to point B in one school year, he progressed to point C.

Finally, study of achievement patterns during the investigation of the relationships between the changes in achievement and pupil, school, and program characteristics suggest that factors associated with the pupil and classroom determine most of the year-to-year changes in achievement level, rather than factors associated with the school district or school. The statistical methods of regression analysis and analysis of variance were used to judge to what degree these characteristics would account for the difference in observed pupil performance.

Most of the results were inconclusive, partly because of the lack of significant performance gain in the observed data. The data revealed no statistical relationship between reading achievement and mobility of pupils, school size, degree of economic deprivation, grade level, or attendance rate. The other characteristics have some interesting aspects.

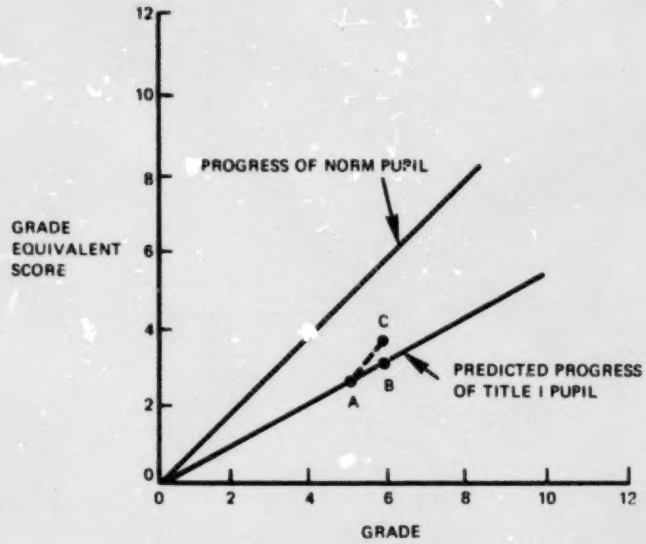

Figure 5. Effect of concentrated reading improvement program on pupil achievement.

There is some statistical evidence that schools having a lower Negro composition respond better than those with a high Negro composition. As shown in Figure 6, there were significant groupings of schools in both the "mostly white" and "mostly black" categories. The schools with less than 20 percent Negro enrollment had positive performance gains for all measures, while the other four categories had negative changes for all measures. The relationship was nonlinear, with the 40–59 percent Negro group showing the poorest response. However, investigations allowed by this study did not suggest a reason for the differences in performance gains.

Educational deprivation was measured in terms of the mean reading score for the class during the "pre" year. On the average, the grade-units having lower initial achievement levels responded slightly better than those having a higher initial achievement. However, the relationship was erratic. In some cities it was clearly lacking, even where it was known that remedial programs were concentrated on the lowest achievers.

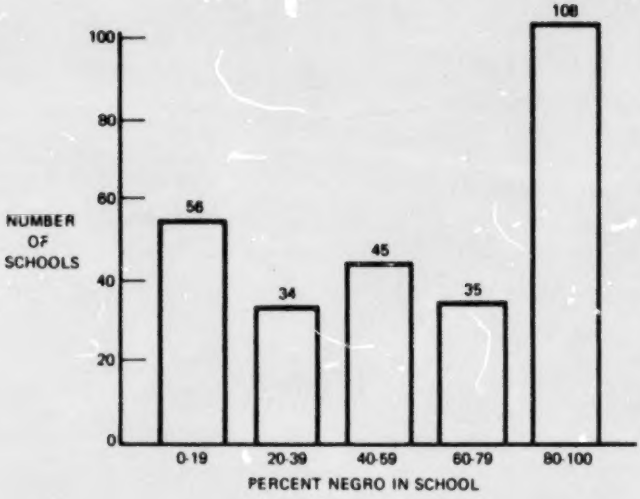

Figure 6. Racial composition of sample.

The last factor of interest is the Title I expenditure per pupil. When consideration was given to Title I expenditures per pupil for the actual exposure period between test measurements, significant positive correlations were found with changes in achievement at the first decile, mean, and both quartiles. The data for this analysis included all 11 districts, but expenditure data were available only at the district level, reducing the sensitivity of the expenditure variable considerably.

As a part of a further analysis of five of the 11 school districts, TEMPO estimated compensatory education costs at the grade level by allocating CE activities and costs based upon CE benefits received. This estimated measurement of expenditures per pupil was then compared with changes in achievement statistics. No consistent relationship was identified, but this is perhaps not surprising because a large proportion of Title I funds was spread thinly over large groups of students.

EVALUATION EFFORTS OF OTHERS

The TEMPO evaluation effort took place early in the Title I program, after only 1-1/2 years of operation. This period was

characterized by a policy involving expenditures on a wide variety of programs and a vast number of pupils rather than a policy of serving a concentrated group. Nearly 3 years have now passed, and other Title I evaluation efforts have been conducted. TEMPO recently examined these to determine their findings. Only a few other studies have evaluated Title I activities in many parts of the nation and surprisingly, these included only limited analysis of achievement data—none has been based on a sample as large as that of the TEMPO evaluation.

The only other released national study on Title I that has been concerned with relative achievement gains was the Office of Education evaluation for the 1967–1968 school year. The impact of Title I on reading was stressed in this study since achievement information was available on the 1967–1968 $200 million Title I special reading programs directed at 3.5 million pupils in grades 2, 4, and 6. However, OE received usable pre and posttest data in only 9 percent of the replies to its mail questionnaire. The data covered only 11,490 pupils, a much smaller sample than had been hoped for. Although this study brought little information about actual achievement gains that could be used to evaluate Title I, it did present representative data about Title I programs and participants.

The national evaluation report on Title I for the 1968–1969 year has not yet been released, but preliminary results of this evaluation are available. The expenditure on reading programs was again found to be the highest of all Title I programs. Although only limited, nonrepresentative data could be collected, they were used to determine some trends in reading achievement at grades 2, 4, and 6. These trends seem to be very similar to those found in the past. There is no consistent evidence of gains by participants in Title I reading programs, and the longer disadvantaged children are in school the more the reading deficit seems to increase.

Three other studies have dealt with Title I on the national level, but none has evaluated pupil performance. In late 1969, a critical report on Title I entitled "Is It Helping Poor Children," was jointly released by the Washington Research Project of the Southern Center for Public Policy and the NAACP Legal Defense

and Educational fund. Their conclusions about ineffectiveness of Title I are based upon programs not reaching enough eligible children, not being concentrated on students most in need, and certain misuses of Federal Title I funds by local districts.

The National Advisory Council on Education of Disadvantaged Children was charged by the Congress to review the administration and operation of Title I. In general, the Council has seemed to view its charter in a context of recommending better administration and operation of programs, and has not attempted evaluation of pupil performance.

In a report that has had limited distribution, the HEW Urban Education Task Force has proposed some solutions to the urban school crisis. The authors of this report feel that Title I is a program motivated more by sociopolitical objectives than by educational objectives and question whether rigorous evaluation of its results is practicable. This report refers to a joint new federal-state information system—"Belmont"—as a program that may produce information on the characteristics of successful programs, but that is unlikely to offer an opportunity for systematic research on the development of successful strategies.

Some evaluations have been carried out by states and cities. One such study, similar to the TEMPO study, was done by the State of Connecticut, and resulted in some similar findings. Connecticut's findings in terms of degree of achievement difference between the average and the educationally deprived were comparable, as was the lowered achievement at the same grade level after Title I had been implemented. Connecticut also found relationships between the percentage of minority groups in the schools and achievement.

California has conducted yearly evaluations and has found that the best achievement results have come in programs where the financial level of support has been the highest. Districts noting substantial improvement in pupil achievement have expended an average of $283 per student; districts that showed little or no improvement expended $160 per pupil from Title I monies.

Several other important conclusions can be drawn from the 1968–1969 data in California. Significant achievement gains were

identified, the greatest being made by pupils in the middle elementary grades, who have been exposed to compensatory education for several years. Compared to California's past experience of 7 month's growth per year of instruction for disadvantaged pupils, 75 percent of Title I pupils are achieving at a rate greater than one grade level per year. Average achievement rates in the big city Title I projects showed moderate improvement over past years. Two problem areas stressed in the California 1968–1969 conclusions were that "too many districts were still rotating students in and out of the program in a turnstile fashion," and the lateness of congressional appropriations that is a major problem in many districts.

Although New York State's report has not been fully completed, the achievement data possibilities for longitudinal evaluation in that state represent some of the best in the nation since a statewide achievement testing program has been in operation for four elementary grades since the start of Title I funding.

CONCLUSIONS AND RECOMMENDATIONS

The past evaluation efforts by TEMPO and recent review of the evaluation efforts of others lead to several conclusions and recommendations. First, a major TEMPO finding was that with the measuring methods used—primarily the fixed-grade statistical technique—no evidence of widespread enhanced reading achievement associated with the first full year of Title I could be detected.

In order to determine the benefits being derived from CE programs, it is necessary to restrict one's attention to only those pupils involved in the specific program being evaluated. Thus, the second conclusion follows from the first: more refined analytical methods using longitudinal techniques are necessary to find the evidence of success, ever though they may be more costly.

A third conclusion is that general methods of evaluation are not likely to be very revealing unless they operate with detailed and precise information from the individual units being studied. The Title I activities at each school district—and even within each school and grade—require close exposure and sophisticated in-depth

studies to produce an adequate and accurate evaluation. "Evaluation at a distance" is not sufficient; each school district must conduct its own evaluations in order to properly measure pupil progress and correlate this progress with various CE programs, techniques, and approaches. A proper role of the federal government might be to establish procedures to insure compatibility among the individual evaluations, thereby enabling Office of Education analysis of overall effectiveness.

Finally, TEMPO learned that the design of CE activities and the allocation of available funds to the various activities present some very difficult problems, many of which seem to have no clear solutions. These problems, which relate to the establishment of priorities, are:

- Intense expenditures for a few pupils versus small expenditures for many
- Emphasis on pupils at lowest achievement levels versus pupils only slightly below average
- Specially handicapped pupils versus educationally disadvantaged pupils
- Pupil-oriented activities versus teacher-upgrading activities
- Academic skills versus others such as health, cultural, and recreational
- Relative emphasis among the academic skills
- Investment in testing, counseling, and guidance services
- Conventional kinds of CE programs versus experimental and innovative programs
- Relative emphasis among grade levels
- Expenditures for facilities versus personnel
- Regular academic year activities versus summer programs
- Many kinds of activities versus a few
- Relationship of program design to problems of school integration.